

# Deluxe Downflow Condensing Furnaces

## Installation, Start-Up and Service Instructions

For Sizes 040-100

**NOTE:** Read these instructions carefully and completely before installing the furnace.

### INTRODUCTION

Before installing the furnace, refer to "Procedure for Downflow Condensing Furnaces" (packaged with the equipment) for information concerning combustion, venting, piping, and other standard installation practices. Further reference is made to the current edition of the National Fuel Gas Code NFPA 54-1988-1/ANSI Z223.1-1988.

→ Reference should also be made to the regulations of the serving gas supplier and the local building, heating, plumbing, or other codes in effect in the area in which the installation is made.

### → SAFETY CONSIDERATIONS

Installation and servicing of heating equipment can be hazardous due to gas and electrical components. Only trained and qualified personnel should install, repair, or service heating equipment.

Untrained personnel can perform basic maintenance functions such as cleaning and replacing air filters. All other operations must be performed by trained service personnel. When working on heating equipment, observe precautions in the literature, tags, and labels attached to or shipped with the unit and other safety precautions that may apply.

Follow all safety codes, including NFPA No. 54/ANSI Z223.1-1988, National Fuel Gas Code. Wear safety glasses and work gloves. Have fire extinguisher available during startup and adjustment procedures and service call.

Recognize safety information. This is the safety-alert symbol **⚠**. When you see this symbol on the furnace and in instructions or manuals, be alert to the potential for personal injury.

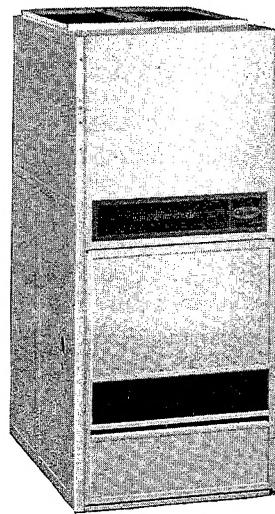
Understand the signal word—DANGER, WARNING or CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING, on the other hand **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which would result in minor personal injury or product and property damage.

Each Model 58DX is shipped from the factory completely assembled with a multispeed direct-drive blower and wired ready for an indoor heating installation. The furnace features a blower control center with easy-to-read, 24-volt terminal strip to ensure proper connections.

The output capacity and any representations of efficiency for this furnace are based on standard Department of Energy test procedures.

The installed operation may vary, depending on installation, weather, and other factors.

The design of the downflow gas-fired furnace is A.G.A. certified for installation on noncombustible flooring. The furnace may be installed on combustible flooring when installed with the accessory downflow subbase. This furnace is designed for installation in alcoves, attics, basements, closets, utility rooms, and manufactured housing (mobile homes). This furnace line is **not** A.G.A. certified for installation in a recreation vehicle or outdoors.

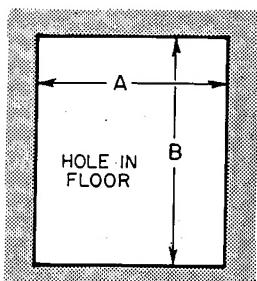


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Fig. 1—Model 58DX

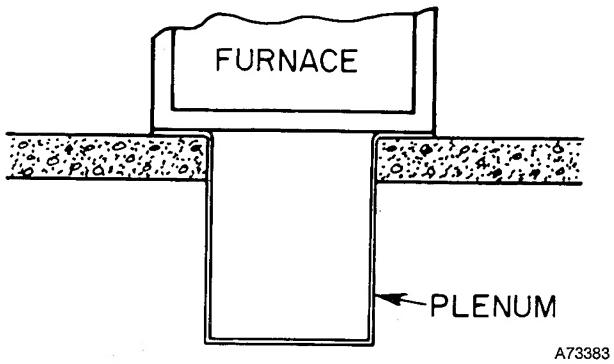
### ⚠ WARNING

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, local gas supplier or your Distributor or Branch for information or assistance. The qualified installer or agency must use only factory authorized kits or accessories when modifying this product. A failure to adhere to this warning can cause electrical shock, fire, personal injury, or death.



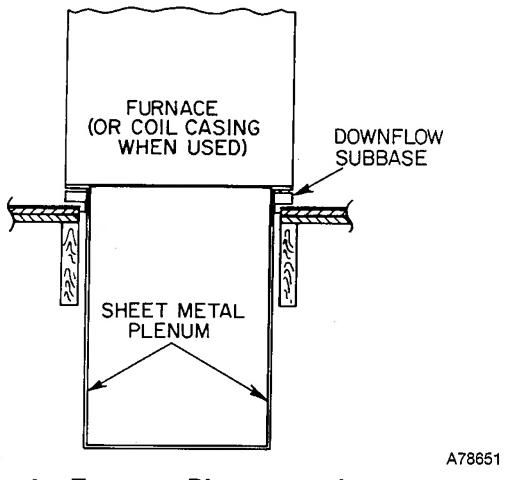
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Fig. 2—Floor Opening for Concrete Slab



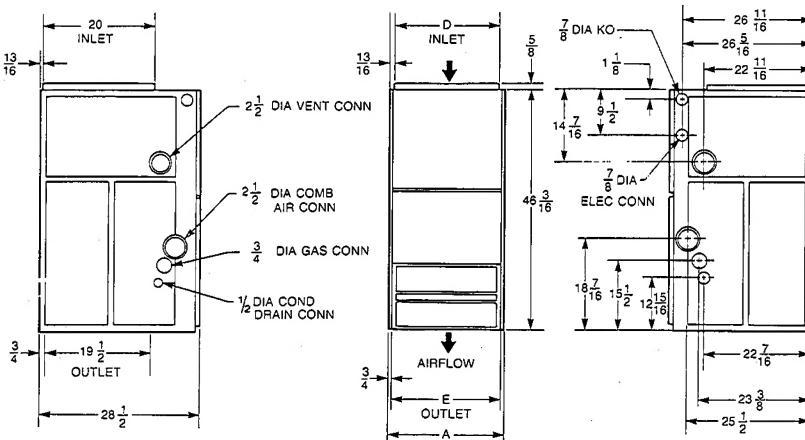
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Fig. 3—Furnace on a Concrete Slab



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Fig. 4—Furnace, Plenum, and Base Installed on a Combustible Floor



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Fig. 5—Dimensional Drawing

Installation requires the following:

- \*I. Inspection
- \*II. Furnace Location
- \*III. Gas Piping
- \*IV. Combustion-Air and Vent Piping
- \*V. Condensate Piping
- VI. Supply-Air Plenum Installation
- VII. Electrical
- VIII. Sequence of Operation
- IX. Filter
- \*X. Startup and Adjustment
- XI. Care and Maintenance

\*For these sections (or installation steps), refer to the appropriate sections of "Procedures for Downflow Condensing Furnaces" booklet packaged with this unit.

For accessory installation details, refer to the applicable installation literature.

**NOTE:** Remove all shipping brackets and materials before operating the furnace.

#### VI. SUPPLY-AIR PLENUM INSTALLATION

##### A. Installation on a concrete slab

1. See Fig. 5 for dimensions and location of supply-air opening in furnace bottom.
2. Construct hole in floor per dimensions in Fig. 2 and Table 1.
3. Place plenum and furnace as shown in Fig. 3.

Table 1—Opening Dimensions

Furnace Width	A	B	
		Furnace	Furnace & Coil*
17 1/2	16 1/8	19 5/8	19 7/16
21	19 5/8	19 5/8	19 7/16
24 1/2	23 1/8	19 5/8	19 7/16

\*These dimensions apply when a Model 28RC or 28RD Evaporator Coil casing is to be installed.

##### B. Installation on a combustible floor

1. Read Installation Instructions packaged with downflow subbase.
2. Cut and frame hole in floor per dimensions in Installation Instructions packaged with downflow subbase. If this requires cutting of a floor joist, tie ends of cut joist into adjacent joists so that proper floor support will be maintained.

Table 2—Dimensions (In Inches)

Size	A	D	E
040	17 1/2	15 7/8	16
060	17 1/2	15 7/8	16
080	21	19 3/8	19 1/2
100	24 1/2	22 7/8	23

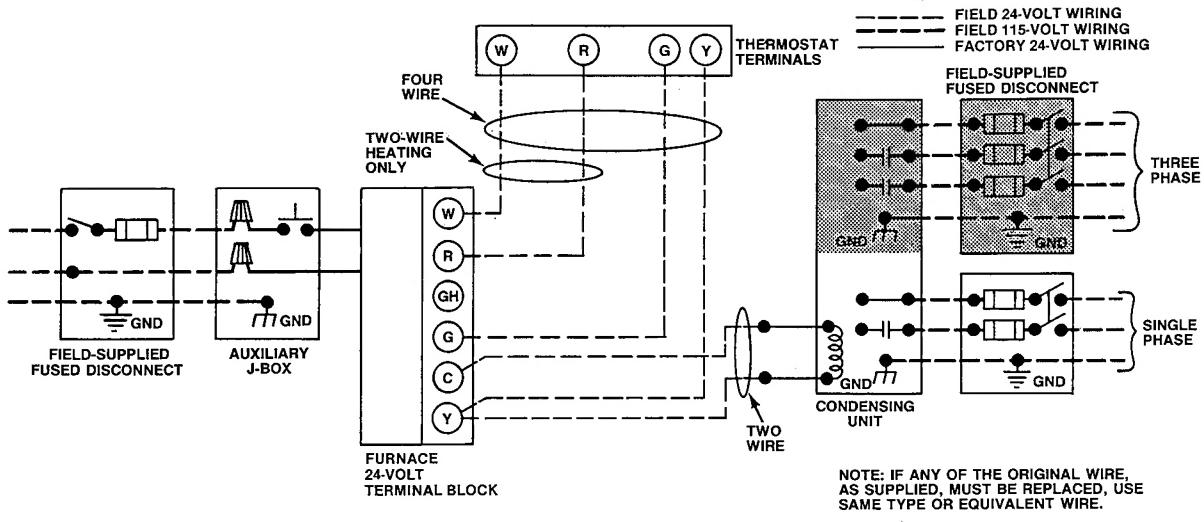


Fig. 6—Heating and Cooling Application Wiring Diagram

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- Assemble and install downflow subbase per instructions packaged with subbase.
- When completed, downflow subbase, plenum, and furnace (or coil casing when used) should be installed as shown in Fig. 4.

## VII. ELECTRICAL CONNECTIONS

### A. 115-Volt Wiring

**IMPORTANT:** Before proceeding with the electrical connections, make certain that voltage, frequency, and phase correspond to that specified on the unit rating plate and Table 3. Also, check to be sure that the service provided by the utility is sufficient to handle the load imposed by this equipment. Refer to Table 3 for the equipment electrical specifications.

Table 3—Electrical Data

SIZE	Volts-Hertz-Phase	Operating Voltage Range		Max. Unit Amps	Min. Wire Size	Max. Wire Length Feet‡	Max. Fuse† or HACR-Type Ckt Bkr Amps
		Max*	Min*				
040	115—60—1	127	104	8.7	14	41	15
060	115—60—1	127	104	8.2	14	42	15
080	115—60—1	127	104	10.1	14	36	15
100	115—60—1	127	104	13.6	12	42	20

\*Permissible limits of the voltage range at which the unit will operate satisfactorily.

†Time-delay fuse is recommended.

‡Length shown is as measured one way along wire path between unit and service panel for maximum 2% voltage drop.

### CAUTION

Do not connect aluminum wire between the disconnect switch and the furnace.

See Fig. 6 for a wiring diagram showing the proper field 115- and 24-volt wiring. Be sure field wiring complies with the National Electric Code and any local codes or ordinances that may apply. Voltage to the furnace must be within the limits shown in Table 3. Contact your local power company for correction of improper voltage.

**NOTE:** Operation of unit on improper line voltage constitutes abuse and could affect unit reliability. Do not install the furnace in a system where voltage may fluctuate above or below permissible limits.

Use a separate fused branch electrical circuit containing the properly sized time-delay fuse or HACR-type circuit breaker for this furnace. See Table 3 for fuse and wire specifications. A disconnecting means must be located within sight of, and readily accessible to, the furnace. The blower door switch may be acceptable in some areas as a disconnecting means.

Line voltage must enter the auxiliary J-box on the right-hand side of the furnace.

### WARNING

The cabinet must have an uninterrupted or unbroken ground according to National Electrical Code, ANSI/NFPA 70-1987, or local codes to minimize personal injury if an electrical fault should occur. This may consist of electrical wire or conduit approved for electrical ground when installed in accordance with existing electrical codes. Do not use gas piping as an electrical ground. A failure to adhere to this warning can result in an electrical shock, fire, or death.

Table 4—Ratings and Performance

SIZE	Input Btuh*	Indoor Capacity Btuh†	ICS** Capacity Btuh†	Temperature Rise Range	Heating		Cooling		Motor HP & Type	Approx Shipping Weight
					Ext Static Pressure	Cfm	Ext Static Pressure	Cfm		
040	44,000	40,000	40,000	20—50	0.10	1335	0.5	1265	1/3 PSC	179
060	66,000	60,000	60,000	40—70	0.12	1275	0.5	1170	1/3 PSC	187
080	88,000	81,000	80,000	40—70	0.15	1590	0.5	1565	1/2 PSC	202
100	110,000	101,000	100,000	40—70	0.20	2000	0.5	2035	3/4 PSC	241

\*Gas input ratings are certified for elevations to 2000 ft. For elevations above 2000 feet, reduce ratings 4% for each 1000 ft above sea level.

†Determined by U.S. Government tests.

\*\*Isolated combustion system; GAMA non-weatherized.

## CAUTION

If a manual disconnect switch is to be mounted on the furnace, select a location where a drill or fastener will not come in contact with electrical or gas components. Check all electrical connections (both factory and field) for tightness. This check should also be done after the unit has reached operating temperatures.

If 115-volt wiring to the unit is encased in a nonmetallic sheath, connect the incoming ground wire to the grounding wire inside the furnace J-box. If properly grounded metallic conduit is used, it will serve as the furnace ground.

### B. 24-Volt Wiring

Make field 24-volt connections at the 24-volt terminal strip. See Fig. 6.

**NOTE:** Use AWG No. 18 "color-coded" copper thermostat wire for lengths up to 100 ft. For wire lengths over 100 ft, use AWG No. 16 wire.

**IMPORTANT:** The thermostat heat anticipation must be set to match the amp draw of the gas valve and other electrical components in the R-W circuit. The amp reading should be taken after the blower has started. The room thermostat should be located where it will be in the natural circulation path of room air. Avoid locations where the thermostat would be:

1. Exposed to cold-air infiltration.
2. Exposed to drafts from windows, doors, or other openings leading to the outside.
3. Exposed to air currents from warm- or cold-air registers.
4. Located behind doors, above or below shelves, mantels, or any other location where the natural circulation of air is cut off.
5. Exposed to heat from fireplaces, radios, televisions, lamps, or the rays of the sun.
6. Located on a wall containing pipes or warm-air ducts, or flue or vent pipes.
7. Located on a wall that is inadequately sealed from the attic, crawlspace, or basement.

Any hole in the plaster or panel through which the wires pass from the thermostat should be adequately sealed with suitable material to prevent drafts from affecting the thermostat.

### C. Blower Control Center

Each furnace features a blower control center. This device will aid the installer and service technician when installing or servicing the unit. A 24-volt terminal strip is marked for easy connection of field wiring. See Fig. 7.

The blower control center features an adjustable blower-off timing device. The "off" timing delay can be varied over a range of 80 to 240 seconds by turning the "off" timing adjustment control in the direction indicated on the label attached to the side of the control box. After a change in adjustment, the time-delay circuit must be energized at least 4 minutes to achieve the new "off" time delay setting. The "off" timing adjustment is set at the factory for a delay of approximately 240 seconds. See Fig. 7. The on-time delay is not adjustable (60 seconds).

### VIII. SEQUENCE OF OPERATION

#### Heating Cycle

The control circuit of the furnace shown in the schematic wiring diagram, Fig. 8, results in the following sequence of

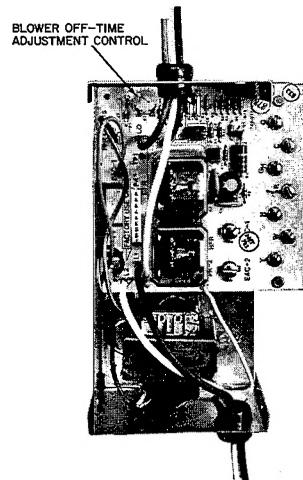
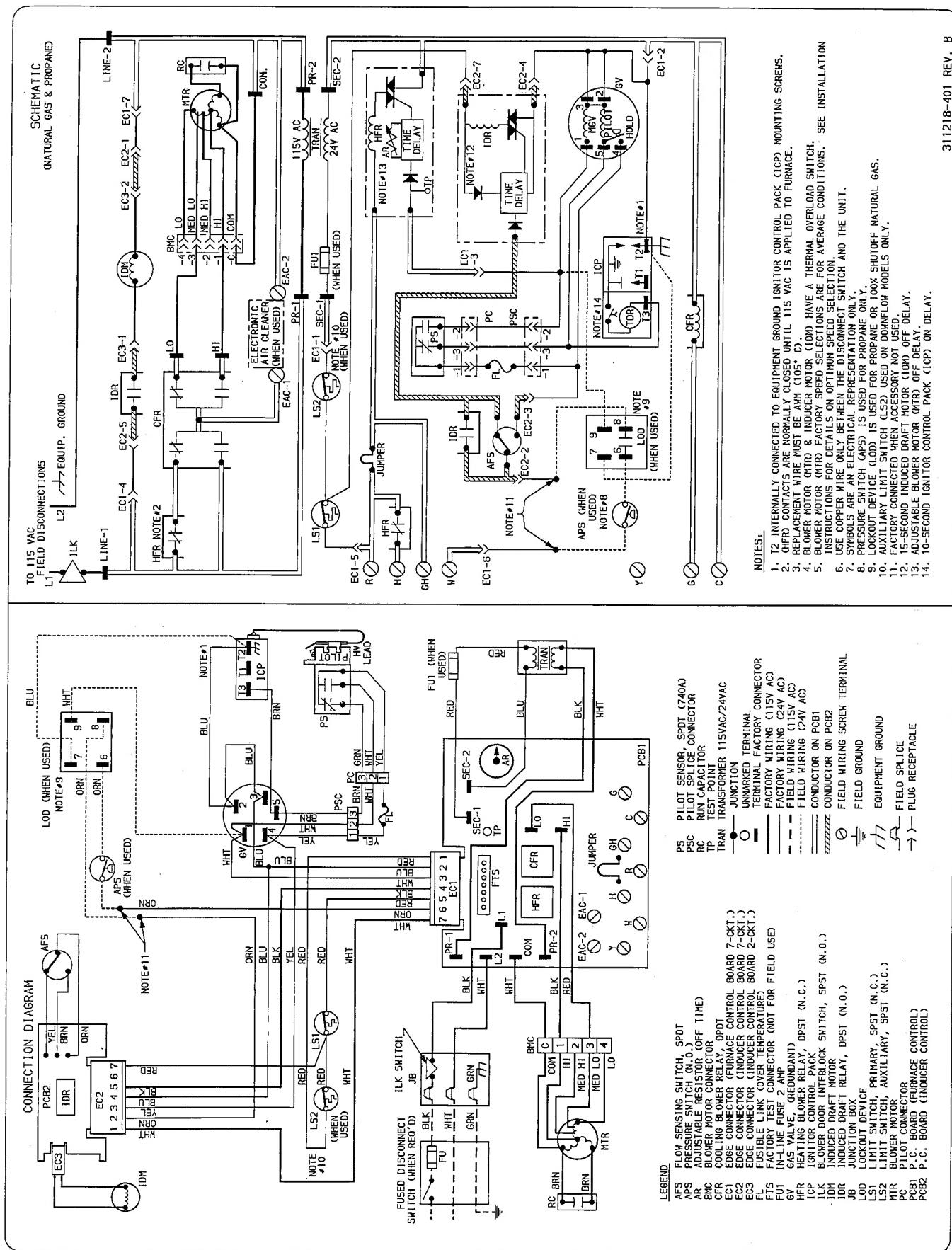


Fig. 7—Blower Control Center

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operation for the heating cycle:

1. When the blower door is in place, 115 VAC is supplied through blower door interlock switch ILK. Transformer TRAN is energized, supplying 24 VAC to heating blower relay HFR, which opens normally-closed blower relay contacts HFR in the low-speed circuit of blower motor MTR.
2. The wall thermostat "calls for heat," closing the R and W circuit. This closed circuit supplies power to the 24-VAC safety circuit containing automatic reset limit switch LS1 and manual reset auxiliary limit switch LS2. Auxiliary limit switch LS2 will break electrical circuit to gas valve if blower compartment or filters overheat. The switch must be manually reset after cause of overheat condition is corrected.
3. The inducer motor relay coil IDR is energized. Inducer motor relay contacts in the 115-VAC circuit close, starting inducer motor IDM. Simultaneously, another set of contacts in inducer motor relay IDR close in the 24-VAC circuit, and lock in inducer motor relay coil IDR. The coil is locked in until the R and W circuit or safety circuit opens.
4. As inducer motor IDM comes up to speed, flow sensing switch AFS actuates energizing the PILOT solenoid coil of gas valve GV and the time-delay relay in spark generator ICP through fusible link FL.
5. When the PILOT solenoid coil is energized, gas flows to the pilot. The internal pressure switch within gas valve GV senses the pilot gas pressure and closes, completing the HOLD circuit. The normally open time-delay relay within spark generator ICP closes after a 10-second purge delay, energizing spark generator. The pilot gas is ignited by a spark produced by spark generator.
6. After a short time delay, during which the pilot flame heats up flame sensing contacts PS, the normally closed contacts PS open. The PILOT solenoid coil remains energized through the HOLD circuit. Spark generator ICP shuts off when flame is sensed at the spark electrode. The normally open flame-sensing contacts PS close 5 to 20 seconds later, energizing the MGV solenoid coil of the GV. Six to 15 seconds later, the MGV solenoid opens, allowing gas to flow to the main burners where the gas is ignited by the pilot flame.
7. Simultaneously, time-delay circuit AR in the blower control center is energized. Approximately 50 seconds



→ Fig. 8—Wiring Diagram

after MGV solenoid coil is energized, heating relay coil HFR is deenergized, closing the 115-VAC contacts of heating relay HFR and starting blower motor MTR on heating speed. The H terminal is energized with 24 VAC when the blower motor is operating on heating speed. Electronic air cleaner terminals (EAC) are energized with 115 VAC when the blower is operating on either heating or cooling speed.

→ 8. When the thermostat is satisfied, the R and W circuit is broken, deenergizing gas valve GV, and the solid-state time-delay circuits for the inducer motor relay IDR and blower motor relay HFR. The gas flow to the pilot and main burners immediately stops. After approximately 15 seconds, induced draft motor relay IDR is deenergized and induced draft motor IDM stops. Approximately 80 to 240 seconds (depending on the blower off-time adjustment) after main burners are extinguished, heating relay HFR is energized and blower motor MTR stops.

**NOTE:** After a brief interruption of either the electric or gas supply, the furnace will not resume operation until the contacts of pilot-flame sensing switch PS move from the normally open position to the normally closed position.

#### Cooling Cycle

1. The wall thermostat "calls for cooling."
2. The R, G, and Y circuits are energized. Simultaneously, the R and Y circuit starts the outdoor condensing unit, and the R and G circuit energizes cooling relay coil CFR. Normally open cooling contacts CFR close, energizing the cooling speed of motor MTR and opening the normally closed contacts of cooling relay CFR. The EAC terminals are energized with 115 VAC when the blower is operating on either heating or cooling speed.

#### IX. FILTER ARRANGEMENT

The two factory-supplied filters are shipped in the blower compartment. After the return-air duct has been connected to the furnace, install the filters (with cross-hatch binding facing blower) in a V-formation inside the return-air plenum. See Fig. 9.

#### ⚠ WARNING

Never operate the unit without a filter or with the filter access door removed. A failure to adhere to this warning can cause a fire, physical injury, or death.

#### X. STARTUP AND ADJUSTMENT

In addition to the following information, refer to "Procedures for Downflow Condensing Furnaces."

**NOTE:** The furnace blower access panel must be in place to complete the 115-volt circuit to the furnace.

#### ⚠ CAUTION

This furnace is equipped with a fusible link in the burner enclosure. This link will melt if an over-heating condition caused by an inadequate combustion-air supply or improper venting practices develops. DO NOT jumper this fuse. Correct the condition and replace the fuse with an identical part.

The gas service pressure must not exceed 0.5 psig (14 in. wc) for natural gas.

**NOTE:** The gas valve regulator has been nominally-set at 3.5 in. wc for natural gas. Refer to "Procedures for Downflow Condensing Furnaces" for readjusting and checking input.

#### ⚠ CAUTION

The unit must not be installed, operated, and then turned off and left turned off, in an unoccupied structure during cold weather when the temperature drops to 32°F and below. Freezing condensate left in the furnace will damage the equipment.

#### A. When winterizing the furnace, it is necessary to proceed as follows:

1. Mix a solution of equal amounts of ethylene glycol (Prestone II antifreeze coolant or equivalent) and water.
2. Turn off electrical supply to furnace.
3. Remove control and blower access panels.
4. Disconnect drain tube from bottom of inducer outlet elbow.
5. Insert funnel in drain tube and pour antifreeze/water solution into furnace until it is visible at point where condensate enters open drain.
6. Reconnect drain tube to outlet elbow.
7. Replace control access panel.

#### B. Adjustment of Blower Speed

#### ⚠ CAUTION

Disconnect the electrical power before changing the speed tap. A failure to adhere to this warning can cause personal injury.

To change motor speed taps, remove the motor tap lead (See Table 5.) and relocate it on the desired terminal on the plug-

Table 5—Speed Selector

Speed	Tap No.*
Common	C
Hi	1
Med-Hi	2
Med-Low	3
Low	4

\*White wire from control box to common; black wire from control box to cooling speed selection; red wire from control box to heating speed selection.

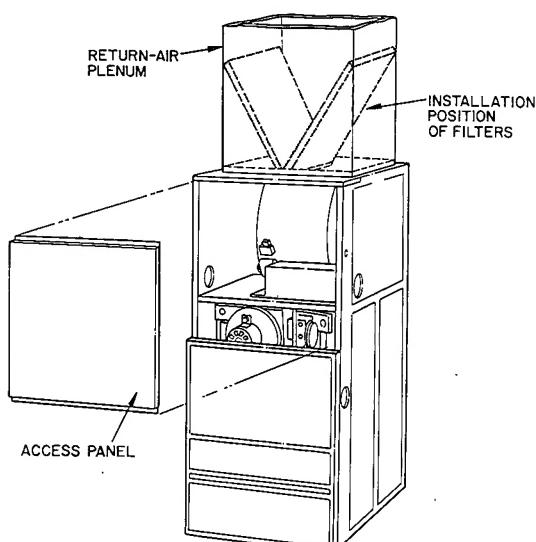


Fig. 9—Position of Filters

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in terminal block/speed selector located on the blower housing. Check the temperature rise. It must be within the limits specified on the unit rating plate.

#### C. Automatic Gas Control Valve

These units are equipped with an automatic gas control valve. Check the proper operation of this valve by moving the room thermostat pointer above and below the room temperature and observe that the main burners light when the pointer is above and go off when the pointer is below the room temperature setting.

### XI. CARE AND MAINTENANCE

#### ▲ CAUTION

Because of possible damage to the equipment or personal injury, maintenance should be performed by qualified persons only.

#### ▲ WARNING

Never store any flammables, chloride, or halogen-containing compounds near, or in contact with, the furnace. A failure to adhere to this warning can cause a fire, personal injury, or death.

For continuing high performance, and to minimize equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your local Dealer as to the proper frequency of maintenance and the availability of a maintenance contract.

#### ▲ WARNING

The ability to properly perform maintenance on this equipment requires certain expertise, mechanical skills, tools, and equipment. If you do not possess these, do not attempt to perform any maintenance on this equipment other than those procedures recommended in the Users Manual. A FAILURE TO ADHERE TO THIS WARNING COULD RESULT IN SERIOUS PERSONAL INJURY AND POSSIBLE DAMAGE TO THIS EQUIPMENT.

#### ▲ WARNING

Turn off gas and electrical supply to the unit before performing any maintenance or service on the unit. Follow the operating instructions attached to the furnace. A failure to adhere to this warning can cause personal injury.

The minimum maintenance that should be performed on this equipment is as follows:

1. Check and clean or replace air filter each month or as required.
2. Check blower motor and wheel for cleanliness and lubrication each heating and cooling season. Clean and lubricate as necessary. (See Section XI, B.)
3. Check electrical connections for tightness and controls for proper operation each heating season. Service as necessary.
4. Check for proper condensate drainage.
5. Check for blockages of combustion-air and vent pipes.

#### ▲ WARNING

As with any mechanical equipment, personal injury can result from sharp metal edges, etc.; therefore, be careful when removing parts.

##### A. Air Filter

Remember to disconnect electrical power before removing access panels. To clean or replace the air filter, proceed as follows:

1. Remove blower access panel.
2. Reach up behind top plate, tilt filters toward center of return-air plenum, remove filters. See Fig. 9.
3. Clean filter with cold tap water. Spray in direction opposite to airflow.
4. Rinse and let dry. DO NOT oil or coat filter.
5. Place dry filter in furnace with cross-hatch binding facing blower.

##### B. Blower Motor and Wheel

For long life, economy, and high efficiency; clean accumulated dirt and grease from blower wheel and motor annually.

The following steps should be performed by a qualified serviceperson, or agency.

→ Some motors have prelubricated sealed bearings and require no lubrication. These motors can be identified by the absence of oil ports on each end of the motor. For those motors with oil ports lubricate as follows:

Lubricate motor every 5 years if motor is used on intermittent operation (thermostat FAN switch in AUTO position), or every 2 years if motor is in continuous operation (thermostat FAN switch in ON position).

Remember to disconnect electrical supply before removing access panels.

Clean and lubricate as follows:

1. Remove access panels.
2. Remove vent pipe enclosure from top side of blower shelf and position out of way.
3. Note location of wires for reassembly, then remove electrical leads from numbered side of blower speed selector. See Table 5.
4. Loosen hose clamps on outlet elbow and remove elbow.
5. Loosen hose clamp on extension pipe outside of furnace and remove pipe.
6. Remove screws securing blower assembly to blower shelf and slide blower assembly out of furnace.
7. Squeeze side tabs of blower speed selector and pull from blower housing bracket.
8. Loosen screw in strap holding motor capacitor to blower housing and slide capacitor from strap.
9. Mark blower wheel location on shaft to insure proper reassembly.
10. Loosen setscrew holding blower wheel on motor shaft.
11. Remove bolts holding motor mount to blower housing and slide motor and mount out of housing. Disconnect ground wire attached to blower housing before removing motor.
- 12. Lubricate motor (when oilers are provided).
  - a. Remove dust caps or plugs from oil ports located at each end of motor. If motor does not have these caps or plugs, bearings are sealed and need no further lubrication.
  - b. Use a good grade of SAE 20 nondetergent motor oil

and add one teaspoon (5 cc, 3/16 oz, or 16 to 25 drops) in each oil port. The use of other types or grades of oil will damage the motor. Excessive oiling can cause premature bearing failures.

- c. Allow time for total quantity of oil to be absorbed by each bearing.
- d. After oiling motor, wipe excess oil from motor housing.
- e. Replace dust caps or plugs on oil ports.
13. Remove blower wheel from housing.
  - a. Mark blower wheel orientation and cutoff plate location to insure proper reassembly.
  - b. Remove screws securing cutoff plate and remove cutoff plate from housing.
  - c. Remove blower wheel from housing.
14. Clean blower wheel and motor by using a vacuum with soft brush attachment. Be careful not to disturb balance weights (clips) on blower wheel vanes. Do not drop or bend wheel because balance will be affected.
15. Reassemble blower by reversing steps 13a through c. Be sure wheel is positioned for proper rotation.
16. Reassemble motor and blower by reversing steps 7 through 11. If motor has ground wire, be sure it is reconnected. Be sure motor oiling plugs are pointed up when motor is installed, and wheel is centered in blower housing. Spin blower wheel to check clearance.
17. Reinstall blower assembly in furnace.
18. Reinstall outlet elbow and extension pipe. Be sure connections are tight and leak proof.
19. Reinstall vent pipe enclosure.
20. Connect electrical leads to blower speed selector. Note that connections are polarized for correct assembly—DO NOT force.
21. Turn on electrical power and check for proper rotation and speed changes between heating and cooling; operate unit 5 minutes and carefully check for condensate leaks.

#### C. Cleaning Heat Exchangers

If it becomes necessary to clean the heat exchangers, proceed as follows:

1. Turn off gas and electrical supplies to furnace.
2. Remove control and blower access panels.
3. Loosen hose clamps on combustion-air pipe and move air pipe aside.
4. Using backup wrench, disconnect gas supply at ground joint union. Remove gas pipe from valve.
5. Disconnect pilot leads at 3-circuit connector outside of burner enclosure.
6. Disconnect high-voltage lead at spark generator.
7. Disconnect electrical wires from gas valve.
8. Disconnect pressure tubing from right-hand side of burner enclosure and outlet end of gas valve.
9. Remove burner enclosure front.
10. Remove diffuser from inside top of burner enclosure. Remove screws that secure burner enclosure to cell panel. These screws are located inside the burner enclosure.
11. Using care not to damage cell inlet panel gasket, remove gas control assembly from furnace.
12. Remove vent pipe enclosure.
13. Loosen hose clamps at vent pipe connection.
14. Loosen hose clamp and remove drain tube from inducer outlet elbow.

15. Disconnect edge connector from inducer control box.
16. Loosen hose clamp and remove drain tube from inducer housing.
17. Remove mounting screws securing inducer assembly to collector box; remove inducer assembly with outlet elbow.
18. Remove all old sealant from parts.
19. Remove screws securing intake (upper) coupling box and remove from furnace. Remove all old sealant from parts.
20. Remove screws securing primary (lower) coupling box and remove box. Clean old sealant from parts.
21. Loosen hose clamp and remove 7/8-in. drain tube from trap.
22. Hold bucket under 7/8-in. drain tube.
23. Using garden hose, flush each cell of the condensing heat exchanger with water. Use care not to spray water on to interior surfaces of control compartment. Dry all surfaces. When drying, be careful not to remove sealant on face of cell panel around individual cell openings.
24. Using field-provided small wire brush, steel "snake" cable, reversible electric drill, and vacuum cleaner; clean primary heat exchanger cells. NOTE: DO NOT use a brush (or other sharp object) to clean the condensing heat exchanger. Damage to the heat exchanger coating may result. Flush with water and a mild detergent only.

#### D. Reassemble Furnace

1. Apply sealant releasing agent (Pam) to flange of intake coupling box.
2. Apply a generous bead (3/16-in. dia) of G.E. RTV 122, 162, or Dow-Corning RTV 738 sealant (NO substitute is permissible) to flange of coupling box over releasing agent. Your Distributor should have G.E. RTV 122, 162, or Dow-Corning RTV 738 sealants in stock.
3. Being careful not to smear sealant, position intake coupling box so that slot is on left-hand side and install coupling box.
4. Repeat steps 1 thru 3 to install primary coupling box. Position box so tallest end is toward right-hand side of casing.
5. Apply sealant releasing agent (Pam) to collector box.
6. Apply 1/8-in. diameter bead of G.E. RTV 122, 162, or Dow-Corning RTV 738 sealant to back of inducer housing. Apply sealant around inlet air opening. (The sealant should be about 1/4 in. from the edge of the inlet air opening.)
7. Using stainless steel screws, install inducer assembly on collector box and support bracket to coupling box.
8. Connect drain tube from collector box to inducer outlet elbow.
9. Connect small drain tube from top of trap to fitting on bottom of inducer housing.
10. Connect 7/8-in. drain tube to trap and collector box, and tighten hose clamps.
11. Reconnect vent pipe. Be sure clamps are tight.
12. Reinstall vent pipe enclosure.
13. Check condition of gasket on cell inlet panel of burner enclosure. Replace gasket if necessary. See Fig. 10.
14. Install gas control assembly in furnace.
15. Install diffuser and burner enclosure front.
16. Reconnect pilot leads at 3-circuit connector.
17. Reconnect high-voltage lead to spark generator.

18. Refer to furnace wiring diagram and connect wires to gas valve.
19. Reconnect pressure tubes to gas valve and burner enclosure. Be sure tubes are not kinked.
20. Using backup wrench, install gas pipe in gas valve.
21. Reconnect gas pipe at ground joint union.
22. Reconnect combustion-air pipe. Tighten hose clamps.
23. Turn on gas and electrical supplies.

### ⚠ WARNING

Never use matches, candles, flame, or other sources of ignition to check for gas leakage. Use a soap-and-water solution. A failure to adhere to this warning can cause a fire, personal injury, or death.

24. Check for gas leaks.
25. Check furnace operation through two complete operating cycles.
26. Check pilot tube and gas valve manifold connection for gas leaks while furnace is in operation.

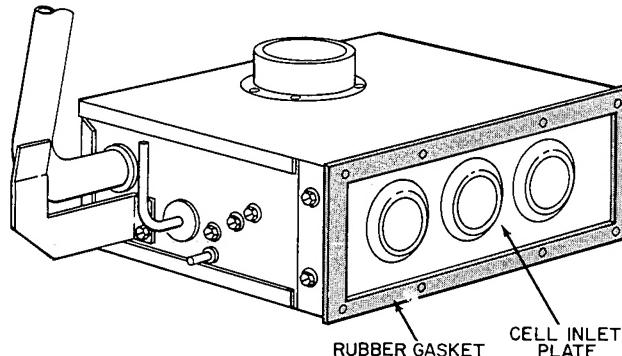


Fig. 10—Burner Enclosure

27. After condensate starts to drain, check for condensate leaks.
28. Replace control and blower access panels.

#### E. Pilot

Check the pilot and clean if necessary at the beginning of each heating season. The pilot flame should be high enough for proper impingement of the safety element and to light the burners. Remove any accumulation of soot and carbon from the safety element. Check spark electrode gap. See Fig. 11 for proper spark gap.

#### F. Electrical Controls and Wiring

**NOTE:** There may be more than one electrical supply to unit.

With power disconnected to unit, check all electrical connections for tightness. Tighten all screws on electrical connections. If any smoky or burned connections are noticed, disassemble the connection, clean all parts, strip wire, and reassemble properly and securely. Electrical controls are difficult to check without proper instrumentation; therefore, reconnect electrical power to unit and observe unit through two complete operating cycles.

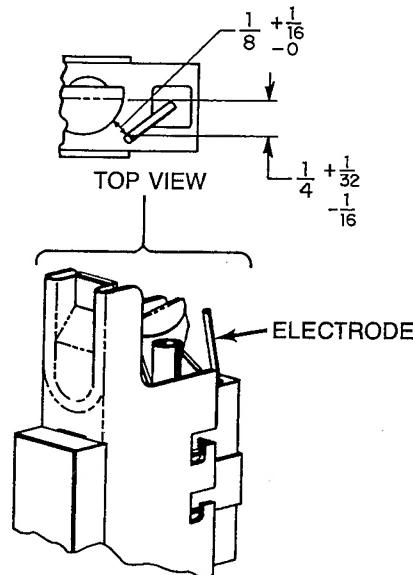


Fig. 11—Position of Electrode to Pilot

